PATENT CLAIMS

1. An X-ray opaque glass, characterized by a composition (in mol%) of:

SiO_2	60-98
Yb_2O_3	0.1-40
ZrO_2	0-40

2. The X-ray opaque glass as claimed in claim 1, characterized by a composition (in mol%) of:

SiO_2	60-98
Yb_2O_3	0.1-40
ZrO_2	0.1-40

3. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by a composition (in mol%) of:

SiO_2	70-98
Yb_2O_3	0.5-15
ZrO_2	0.5-15

4. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by a composition (in mol%) of:

SiO_2	70-98
Yb_2O_3	1-15
ZrO_2	1-15

5. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by an additional content (in mol%) of:

WO_3	0-40
La_2O_3	0-40

Nb_2O_5	0-40
HfO_2	0-40
Ta_2O_5	0-40
Gd_2O_3	0-40
Lu_2O_3	0-40
Sc_2O_3	0-40
Y_2O_3	0-40
F_2	0-5

6. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by an additional content (in mol%) of:

Li_2O	0-<10
Na_2O	0-<10
K_2O	0-<10
with $\sum$ $Li_2O + Na_2O + K_2O$	0-<10

7. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by an additional content (in mol%) of:

MgO	0 - 10
CaO	0 - 10
SrO	0 - 10
BaO	0 - 10
ZnO	0 - 10
with $\sum$ MgO + CaO + SrO + BaO	0 -<10

8. The X-ray opaque glass as claimed in at least one of the preceding claims, characterized by an additional content (in mol%) of:

TiO_2	0 - 10
GeO_2	0 - 10
P_2O_5	0 - 10
with $\sum$ $TiO_2 + GeO_2 + P_2O_5$	0 -<15

9. The X-ray opaque glass as claimed in at least one of claims 5 to 8, characterized by a composition which contains at most five oxidic components.

10. The X-ray opaque glass as claimed in at least one of claims 4 to 8, characterized by a composition which contains at most four oxidic components.

11. The X-ray opaque glass as claimed in at least one of claims 4 to 8, characterized by a composition which contains at most three oxidic components.

12. A glass powder with a mean grain size of up to 20 µm, characterized by a composition as claimed in at least one of claims 1 to 11.

13. The glass powder as claimed in claim 12, characterized by silanization of its surface.

14. A process for producing a glass having a composition as claimed in at least one of claims 1 to 11, comprising batch preparation from the raw material components of the glass, batch charge and melting in a melting vessel, characterized in that the temperature during melting is at least 1500°C, particularly preferably at least 1600°C.

15. The process as claimed in claim 14, characterized in that the melting vessel at least partially comprises solid iridium and/or alloys with a high iridium content.

16. The process as claimed in claim 14, characterized in that the melting is carried out with the aid of incident high-frequency radiation.

17. The process as claimed in claim 16, characterized in that the high frequency is from 50 kHz to 2 MHz.

18. The process as claimed in at least one of claims 14 to 17, characterized in that at least one raw material component of the glass is in the form of nanoscale powder prior to the step of batch charge.

19. The process as claimed in at least one of claims 14 to 18, characterized in that for the batch preparation at least one raw material component is in the form of nanoscale powder which is dispersed and/or dissolved in a solvent together with the remaining raw material components, introduced into a mold and dried to form a green body.

20. The process as claimed in claim 19, characterized in that the drying of the raw material components which have been dissolved and/or dispersed and introduced into the mold is carried out with the aid of the action of microwave radiation.

21. The process as claimed in claim 20, characterized in that the mold at least partially comprises a non-wetting material, preferably Teflon.

22. The process as claimed in at least one of claims 19 to 21, characterized in that the green body is charged as batch either as a single entity or in milled form.

23. The process as claimed in at least one of claims 19 to 21, characterized in that the green body is milled, dissolved and/or dispersed in a solvent and dried to form a compact body.

24. The process as claimed in claim 19 and/or 23, characterized in that the solvent used is alkali metal lye or ammonia water.

25. The process as claimed in at least one of claims 19 to 24, characterized in that the green body and/or the compact body are sintered.

26. The process as claimed in claim 25, characterized in that the waste heat of melting is at least partially used for the sintering.

27. The use of the glass as claimed in at least one of claims 1 to 11 as a dental glass.

28. The use of the glass as claimed in at least one of claims 1 to 11 as a filler in composites for dental restoration.

29. The use of the glass as claimed in at least one of claims 1 to 11 as a filler in composites based on epoxy resin for dental restoration.

30. The use of the glass as claimed in at least one of claims 1 to 11 as an X-ray opacifier in dental compositions.

31. The use of the glass as claimed in at least one of claims 1 to 11 for optical applications.

32. The use of the glass as claimed in at least one of claims 1 to 11 in display technology.

33. The use of the glass as claimed in at least one of claims 1 to 11 as substrate glass in photovoltaics.

34. The use of the glass as claimed in at least one of claims 1 to 11 as lamp glass.

35. The use of the glass as claimed in at least one of claims 1 to 11 as substrate glass for biochemical applications.

36. The use of the glass as claimed in at least one of claims 1 to 11 as target material in PVD processes.

37. The use of the glass as claimed in at least one of claims 1 to 11 as a glass fiber, in particular for reinforcing concrete.